UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,949	03/24/2004	Tong Zhang	200300641-1	4075

22879   7590   02/23/2010
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
3404 E. Harmony Road
Mail Stop 35
FORT COLLINS, CO 80528

EXAMINER
PERUNGAVOOR, SATHYANARAYA V

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
02/23/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
laura.m.clark@hp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/807,949
Filing Date: March 24, 2004
Appellant(s): ZHANG, TONG

_____

J. Michael Johnson (Reg. No. 37,856)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 5, 2009 appealing from the Office action

mailed June 16, 2009.

(1) Statement of Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Statement of Related Cases

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Jurisdictional Statement

The jurisdictional statement contained in the brief is correct.

(4) Table of Contents

The table of contents contained in the brief is correct.

(5) Table of Authorities

The table of authorities contained in the brief is correct.

(6) Status of Claims [Reserved]

Status of claims contained in the brief is correct.

(7) Status of amendments

No amendment after final has been filed.

(8) Grounds of Rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States
before the invention thereof by the applicant for patent, or on an international application by another who has
fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by
the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do

not apply when the reference is a U.S. patent resulting directly or indirectly from an international

application filed before November 29, 2000. Therefore, the prior art date of the reference is

determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C.

102(e)).

[R.1]   Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46 are rejected under 35 U.S.C. 102(e) as being

anticipated by Toklu et al. ("Toklu") [US 6,549,643 B1].

Regarding claim 23, Toklu meets the claim limitations, as follows:

A key-frame extraction system *[fig. 1]*, comprising: video frame extractor *(i.e. 12)* that

extracts each of a series of video frames *(i.e. segments)* from a video *[fig. 1; col. 5, ll. 39-*

44]; a set of frame analyzers *(i.e. 15, 16, 17)* that obtain the series of video frames in

parallel from the video frame extractor *(i.e. 12)*, each frame analyzer selecting a

corresponding set of candidate key-frames from the series by performing a different

corresponding analysis on each video frame in the series such that the analyses are

selected to detect multiple types of meaningful content in the video *[fig. 1; col. 5, l. 61-*

col. 6, l. 7]; key-frame selector *(i.e. 18)* that obtains the corresponding candidate key-

frames from each frame analyzer *(i.e. 15, 16, 17)* and arranges the candidate key-

frames into a set of clusters *(i.e. key frames in their respective segments)* and that selects one

of the candidate key-frames *(i.e. reference key frame)* from each cluster *(i.e. segment)* as a

key-frame for the video *[fig. 4; col. 13, ll. 60-66]*.

Regarding claim 25, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the key-frame selector *(i.e. 18)*

selects the key-frames by determining an importance score *(i.e. object motion)* for each

candidate key-frame in each cluster *(i.e. segment)* *[fig. 4; col. 13, ll. 60-66]*.

Regarding claim 26, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 25, wherein the key-frame selector *(i.e. 18)*

determines the importance scores *(i.e. object motion)* by determining an image content

(i.e. region segmentation) of each candidate key-frame *[fig. 4; col. 13, ll. 37-40]*.

Regarding claim 28, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the key-frame selector *(i.e. 18)*

selects the key-frames by determining an image quality *(i.e. object motion)* for each

candidate key-frame in each cluster *(i.e. segment)* *[fig. 4; col. 13, ll. 60-66]*. [Note: Image

quality used in this context has the same meaning as image feature. It should <u>not</u>

equated to high quality or low quality images].

Regarding claim 29, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a

color histogram analyzer *(i.e. 17) [fig. 1]*.

Regarding claim 30, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers *(i.e. 15, 16,*

17) include a color layout *(i.e. distribution or histogram)* analyzer *(i.e. 17) [fig. 1]*.

Regarding claim 31, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers *(i.e. 15, 16,*

17) include a fast camera motion detector *(i.e. 15) [fig. 1]*.

Regarding claim 32, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers *(i.e. 15, 16,*

17) include a camera motion tracker *(i.e. 15) [fig. 1]*.

Regarding claim 33, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers *(i.e. 15, 16,*

17) include an object motion analyzer *(i.e. 15) [fig. 1]*.

Regarding claims 36, 38, 39 and 41-46, all claimed limitations are set forth and rejected as per

discussion for claims 23, 25, 26 and 28-33.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
> 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

[R.2]   Claims 24, 27, 34, 37, 40 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Toklu in view of Wu et al. ("Wu") [US 2003/0068087 A1].

Regarding claim 24, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

> The key-frame extraction system of claim 23, further comprising an audio event

> detector that obtains the series of video frames from the video frame extractor and

> that selects a corresponding set of candidate key-frames from the series by

> performing an audio analysis on each video frame in the series and that provides the

> corresponding set of candidate key-frames to the key-frame selector.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as

follows:

> The key-frame extraction system of claim 23, further comprising an audio event

> detector *(i.e. 501)* that obtains the series of video frames from the video frame

extractor *(i.e. 40)* and that selects a corresponding set of candidate key-frames *(i.e.*
frames with human sounds) from the series by performing an audio analysis on each
video frame in the series and that provides the corresponding set of candidate key-
frames *(i.e. frames with human sounds)* to the key-frame selector *(i.e. 503) [paras. 0027 and*
0041].

It would have been obvious to one with ordinary skill in the art at the time of invention to
modify the teachings of Toklu with Wu to include audio analysis the motivation being to
reduce the amount of image processing performed on the video data *[para. 0026]*.

Regarding claim 27, Toklu meets the claim limitations as set forth in claim 25.

Toklu does not explicitly disclose the following claim limitations:

The key-frame extraction system of claim 25, wherein the key-frame selector
determines the importance scores by determining an audio content of each candidate
key-frame.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as
follows:

The key-frame extraction system of claim 25, wherein the key-frame selector *(i.e. 503)*
determines the importance scores *(i.e. whether or not to process the frame)* by determining
an audio content *(i.e. human sounds)* of each candidate key-frame *[paras. 0027 and*
0041].

It would have been obvious to one with ordinary skill in the art at the time of invention to
modify the teachings of Toklu with Wu to include audio analysis the motivation being to
reduce the amount of image processing performed on the video data *[para. 0026]*.

Regarding claim 34, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

> The key-frame extraction system of claim 23, wherein the frame analyzers include a
> human face detector.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as
follows:

> The key-frame extraction system of claim 23, wherein the frame analyzers include a
> human face detector *(i.e. 503) [para. 0031]*.

It would have been obvious to one with ordinary skill in the art at the time of invention to
modify the teachings of Toklu with Wu to include face detection the motivation being
human faces are most important users of video content *[para. 0005]*.

Regarding claims 37, 40 and 47, all claimed limitations are set forth and rejected as per
discussion for claims 24, 27 and 34.

[R.3]   Claims 35 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toklu in
view of Dimitrova et al. ("Dimitrova") [US 6,125,229].

Regarding claim 35, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

> The key-frame extraction system of claim 23, further comprising a user interface for
> displaying a set of video frames in the video previous to each key-frame and a set of

video frames in the video subsequent to each key-frame and for obtaining a user

selection of one or more of the video frames

However, in the same field of endeavor Dimitrova discloses the deficient claim limitations,

as follows:

The key-frame extraction system of claim 23, further comprising a user interface for

displaying a set of video frames in the video previous to each key-frame and a set of

video frames in the video subsequent to each key-frame and for obtaining a user

selection of one or more of the video frames *[col. 12, ll. 59-67]*

It would have been obvious to one with ordinary skill in the art at the time of invention to

modify the teachings of Toklu with Dimitrova and include user input the reasoning being

that user's desire should be taken into account.

Regarding claim 48, all claimed limitations are set forth and rejected as per discussion for

claim 35.

(9) Statement of Facts

Statement of facts contained in the brief is correct.

(10) Argument

GROUND 1: *Summary of Appellant's Arguments*

Regarding claims 23 and 36 appellant argues that Toklu does not teach:

    a.   "obtains the corresponding candidate key-frames from each frame analyzer and

         arranges the candidate key-frames into a set of clusters" [Brief: page 21, para. 2].

      b.   "selects one of the candidate key-frames from each cluster as a key-frame for the video" [Brief: page 21, para. 2].

      c.   "a set of frame analyzers that obtain the series of video frames in parallel from the video frame extractor" [Brief: page 21, para. 2].

      d.   "selecting multiple sets of candidate key frames" [Brief: page 21, para. 2].

      e.   "performing in parallel a set of different analyses on each video frame in the video" [Brief: page 21, para. 2].

Regarding claims 25 and 38 appellant argues that Toklu does not teach

      1.   "the key-frame selector selects the key-frames by determining an importance score" [Brief: Page 23, Para. 3]

Regarding claims 26 and 39 appellant argues that Toklu does not teach

      1.   "key-frame selector determines the importance scores by determining an image content of each candidate key-frame" [Brief: Page 24, Para. 1].

Regarding claims 28 and 41 appellant argues that Toklu does not teach

      1.   "the key-frame selector selects the key-frames by determining an image quality for each candidate key-frame in each cluster" [Brief: Page 24, Para. 2].

Regarding claims 30 and 43 appellant argues that Toklu does not teach

      1.   "frame analyzers include a color layout analyzer" [Brief: Page 24, Para. 3].

Regarding claims 31 and 44 appellant argues that Toklu does not teach

    1. "frame analyzers include a fast camera motion detector" [Brief: Page 25, Para. 2].

Regarding claims 33 and 46 appellant argues that Toklu does not teach

    1. "the frame analyzers include an object motion analyzer " [Brief: Page 25, Para. 3].

GROUND 1: *Examiner's Response*

Regarding claims 23 and 36 Examiner contends that Toklu does teach:

    a. "obtains the corresponding candidate key-frames from each frame analyzer and arranges the candidate key-frames into a set of clusters" because key-frame selector *(i.e. 18)* obtains the corresponding candidate key-frames from each frame analyzer *(i.e. 15, 16, 17)* and arranges the candidate key-frames into a set of clusters *(i.e. key frames corresponding to respective segments)* See fig. 4; col. 13, ll. 60-66.

    b. "selects one of the candidate key-frames from each cluster as a key-frame for the video" because key-frame selector *(i.e. 18)* selects one of the candidate key-frames *(i.e. reference key frame)* from each cluster *(i.e. key frames corresponding to respective segments)* as a key-frame for the video. *See* fig. 4; col. 13, ll. 60-66. That is, the key frames from each video segment are further reduced to a single reference key frame to represent that segment.

    c. "a set of frame analyzers that obtain the series of video frames in parallel from the video frame extractor" because a set of frame analyzers *(i.e. 15, 16, 17)* obtain the series of video frames in parallel *(i.e. video data is input directly into each of 15, 16, 17 and in contradistinction with "series" where input of one module will depend on the output*

of another module) from the video frame extractor *(i.e. 12) See* fig. 1; col. 5, l. 61-col. 6, l. 7.

   d. "selecting multiple sets of candidate key frames" because each frame analyzers *(i.e. 15, 16, 17)* obtains a set of candidate key frames. *See* fig. 1; col. 5, l. 61-col. 6, l. 7.

   e. "performing in parallel a set of different analyses on each video frame in the video" because each frame analyzers *(i.e. 15, 16, 17)* performs a different analysis in parallel. *See* fig. 1; col. 5, l. 61-col. 6, l. 7.

Regarding claims 25 and 38 Examiner contends that Toklu does teach

   1. "the key-frame selector selects the key-frames by determining an importance score" because the key-frame selector *(i.e. 18)* selects the key-frames by determining an importance score *(i.e. object motion) See* fig. 4; col. 13, ll. 60-66.

Regarding claims 26 and 39 Examiner contends that Toklu does teach

   1. "key-frame selector determines the importance scores by determining an image content of each candidate key-frame" because key-frame selector *(i.e. 18)* determines the importance scores *(i.e. object motion)* by determining an image content *(i.e. region segmentation)* of each candidate key-frame *See* fig. 4; col. 13, ll. 37-40.

Regarding claims 28 and 41 Examiner contends that Toklu does teach

1. "the key-frame selector selects the key-frames by determining an image quality for each candidate key-frame in each cluster" because the key-frame selector *(i.e. 18)* selects the key-frames by determining an image quality *(i.e. object motion; Image quality used in this context has the same meaning as image feature)* for each candidate key-frame in each cluster *(i.e. segment) See* fig. 4; col. 13, ll. 60-66.

Regarding claims 30 and 43 Examiner contends that Toklu does teach

1. "frame analyzers include a color layout analyzer" because frame analyzers *(i.e. 15, 16, 17)* include a color layout *(i.e. distribution or histogram)* analyzer *(i.e. 17). See* fig. 1

Regarding claims 31 and 44 Examiner contends that Toklu does teach

1. "frame analyzers include a fast camera motion detector" because the frame analyzers *(i.e. 15, 16, 17)* include a fast camera motion detector *(i.e. 15). See* fig. 1.

Regarding claims 33 and 46 Examiner contends that Toklu does teach

1. "the frame analyzers include an object motion analyzer " because frame analyzers *(i.e. 15, 16, 17)* include an object motion analyzer *(i.e. 15). See* fig. 1.

GROUND 2: *Summary of Appellant's Arguments*

Regarding claims 24, 27, 34, 37, 40 and 47 appellant argues that there is no motivation to combine because

a. There would be no reduction in image processing by including audio analysis of Wu because no face detection is performed. [Brief: Page 28, Para. 2].

      b.   Human faces are not most important to users of video content. [Brief: Page 29,

            Para. 2]

GROUND 2: *Examiner's Response*

Regarding claims 24, 27, 34, 37, 40 and 47 Examiner contends that there is motivation to

combine because

      a.   Reduction in image processing would occur by including audio analysis of Wu

            because frames with silence or noise would not be processed. By eliminating

            those frames from processing, computational load is reduced. *See* Wu at Para.

            0027.

      b.   Human faces are most important to users of video content. *See* para. 0005 of Wu.

GROUND 3: *Summary of Appellant's Arguments*

Regarding claims 35 and 48 appellant argues that there is no reasoning to combine because

the Examiner's reasoning of taking into account user's desire is conclusory. [Brief: Page 33,

Para. 3]

GROUND 3: *Examiner's Response*

Regarding claims 35 and 48 Examiner contends that there is reasoning to combine because

utilizing a user input would predictably result an improved system by taking into account a

user's desire. *See KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007).

(11) **Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Sath V Perungavoor/

Examiner, Art Unit 2624

Conferees:

/Matthew C Bella/

Supervisory Patent Examiner, Art Unit 2624

/Bhavesh M Mehta/

Supervisory Patent Examiner, Art Unit 2624